U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF SOILS.
IN COOPERATION WITH THE MISSISSIPPI GEOLOGICAL SURVEY.

SOIL SURVEY OF CHOCTAW COUNTY, MISSISSIPPI.

BY

A. C. ANDERSON, OF THE U. S. DEPARTMENT OF AGRICULTURE, IN CHARGE, AND E. MALCOLM JONES AND THOMAS JABINE, OF THE MISSISSIPPI GEOLOGICAL SURVEY.

[Advance Sheets—Field Operations of the Bureau of Soils, 1920.]

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By A. C. ANDERSON, of the U. S. Department of Agriculture, In Charge, and E. MALCOLM JONES and THOMAS JABINE, of the Mississippi Geological Survey.

DESCRIPTION OF THE AREA.

Choctaw County is situated about 50 miles northeast of the geographical center of Mississippi. The eastern boundary is about 45 miles west of the Alabama State line. The county, which is irregular in outline has an extreme width from east to west of 21 miles and a length from north to south of 29 miles. It comprises 8 whole congressional townships and parts of 6 others, and has a total area of approximately 414 square miles, or 264,960 acres.

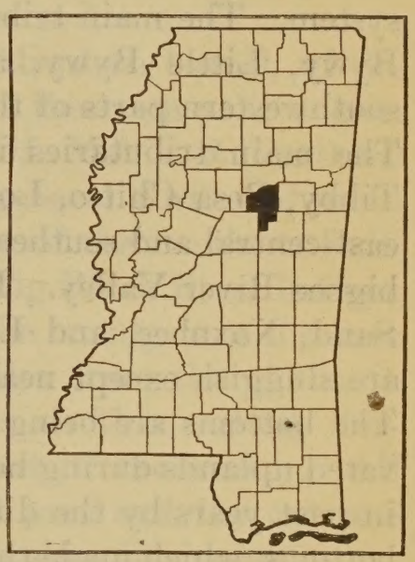

FIG. 8.—Sketch map showing location of the Choctaw County area, Mississippi.

Choctaw County lies entirely within the broad physiographic division known as the Coastal Plain. The country consists of rolling uplands and level stream bottoms and terraces. The surface features of the upland vary with the locality. The eastern part of the county, comprising what are known as the Noxubee Hills, and the extreme southwestern part of county, known as the Ironstone Hills, are very hilly. The Noxubee Hills, which lie in a belt 3 or 4 miles wide, form a divide between the Tombigbee River and the Big Black River drainage. The general slope to the west of the divide is rather gentle, but to the east the surface is steep and badly eroded. Here most of the streams flow in a general southeasterly direction and there is little difference in the topography on the north and south sides of the bottoms. Looking to the west from this divide the county has the appearance of a thoroughly dissected plateau. Here the streams flow in a general westerly direction, except in the extreme southern part of the county, where they flow southward. A peculiar feature of the topography here is that the stream bottoms and terraces merge rather gradually with the uplands on the north side of the streams, while they are bordered by steep, low bluffs of an average elevation of about 100 feet on the south side of the

streams. From the top of these bluffs most of the smaller streams flow in the direction of the general slope of the county to the next large stream to the south. The stream bottoms appear to be gradually moving southward by cutting into the bluffs on the south and leaving the gently sloping uplands to the north. Distinct terraces are of relatively small extent. The stream bottoms are remarkably wide, considering that the streams have their source in the county. The Big Black River, which forms the north boundary of the county, is the only stream of importance in the county which does not rise within its borders.

As a whole, the county is one of the highest and most hilly in central Mississippi. Elevations range from about 320 feet where the Big Black River leaves the county to about 600 feet on the highest points in the Noxubee ridge. All the uplands are well or excessively drained. Most of the slopes need terracing to prevent washing.

Approximately the northwestern half of the county lies within the Big Black River Valley, which is part of the Mississippi River system. The main tributaries in the county are Poplar, McCurtain, Bywy, Little Bywy, and Pigeonroost Creeks. The central and southwestern parts of the county lie within the valley of Pearl River. The main tributaries in the county are Yokahockany River, and Tibby, Besa Chitto, Lobutcha, and Tallahaga Creeks. The extreme east-central and southeastern part of the county lies within the Tombigbee River Valley. The main streams here are the Bogue Fallah, Sand, Noxubee, and Little Noxubee Creeks. Most of the streams are sluggish except near their sources, where the gradient is steeper. The bottoms are being filled by material washed in from the cultivated uplands during heavy rains. This filling in has been accelerated in past years by the ditches that have been dug through the smaller bottoms, which made the water rush down to the large bottoms faster than the larger streams could take care of it. A canal system has been started which will prevent the larger bottoms from being flooded in ordinary rains.

Choctaw County was first organized in 1833, but did not have its present form until 1874. The first white settlers came into the county about 1812, mainly from the Carolinas and to a less extent from Georgia and other Southern States. Immigration from these States gradually increased until about 1850 and continued until 1860, since when it has steadily decreased. The present population consists almost entirely of descendants of these early settlers. Some of the earlier settlements were French Camps, Old Bankston, Springfield (which was near the present location of Ackerman), Mineral Wells (near South Union Church), Lagrange, Chester, and Dido. With the coming of the railroads the old settlements gradually moved to them. At present the most thickly populated parts of

the county are north of the Illinois Central Railroad from Ackerman to Weir. The population according to the 1920 census was 12,491. This is a decrease of 13.1 per cent from the population of 1910, which was 14,375. The population in 1900, 1890, and 1880 was 13,036, 10,847, and 9,036, respectively. There has been a large emigration from the county in recent years, especially of negroes, owing to the decline of cotton growing caused by the boll weevil, and to the demand for labor in manufacturing centers.

There are two county seats, Ackerman and Chester. The county officers make their headquarters at Ackerman. The population of Ackerman, according to the 1920 census, is 1,264. The town is a railroad junction point and is of importance as a lumber-manufacturing center and as a local trading point. Weir, which has a population of 377, according to the 1920 census, is the second largest town in the county. It is an active trading point. French Camps and Chester are smaller places, but important as market and distributing centers for their respective neighborhoods. Other marketing points are Reform, Fentress, and Sherwood.

Two railways traverse the county. The Aberdeen branch of the Illinois Central crosses the southern part of the county in a general southwest-northeast direction. The Gulf, Mobile & Northern crosses the eastern part of the county in a general north-and-south direction. The Columbus and Greenville line of the Southern Railway system follows the northern edge of the Big Black River bottom, and parallels the entire north boundary of the county at a distance ranging from about one-half mile to 1½ miles from the old main channel which forms the boundary. Towns on this railway furnish convenient markets for the northern part of the county. All parts of the county, except the west-central part and the extreme southern part, lie within 8 miles of a railroad shipping point.

The roads are mostly poor, but great interest is being taken in their improvement, and good main roads are being constructed in many parts of the county. Telephone service reaches all parts of the county.

CLIMATE.

Choctaw County has a climate characterized by short, mild winters and long, hot summers. The mean temperature for the three winter months—December, January, and February—is 46.7° F., with extremes of −13° and 84° F. The winter temperature ordinarily ranges from 32° to 50° F. during the day and falls slightly below the freezing point at night. The ground rarely remains frozen during the day, and films of ice are found on water only occasionally in protected places. Snow seldom falls and ordinarily thaws as soon as it strikes the ground. Winter weather often consists of a

regular succession of cold, clear days succeeded by rainy spells, warm at first but gradually turning colder until the skies are clear again.

The mean temperature for March, April, and May is 63.1° F. The plum ordinarily begins to blossom about the first part of March. It is followed in turn by the peach, the jessamine, dogwood, and numerous plants. The deciduous trees ordinarily leaf the last of March or the first part of April. Storms are more common in the early spring than any other time of the year.

The mean temperature for June, July, and August is 78.8° F. Extremes of 39° and 104° F. have been recorded during these months. The summer temperature is ideal for cotton and corn. The nights are usually fairly cool during the summer. The mean temperature for the fall months is 64.4° F., and for the entire year 63.2° F.

The average date of the last killing frost in the spring is March 25 and of the first in the fall October 31, which gives an average frost-free period of 220 days. The latest frost recorded in the spring occurred on April 26 and the earliest in the fall on October 11.

The mean annual rainfall is about 50.42 inches. Some rainfall occurs throughout the year. The distribution for the winter, spring, and summer months is even, but the precipitation in the fall is only half as much as for each of the other seasons. The ground is apt to be too wet in the spring and a little too dry in the late summer for cotton and corn. Hot, dry spells in the late summer may materially reduce the yields of corn, but there are no total failures. The weather in the fall months, being comparatively dry, is favorable for gathering the crops.

The following data, which are compiled from the records of the United States Weather Bureau station at Louisville, Winston County, represent fairly the climatic conditions in Choctaw County:

Normal monthly, seasonal, and annual temperature and precipitation at Louisville, Winston County.

[Elevation, 561 feet.]

Month.	Temperature.			Precipitation.		
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year (1904).	Total amount for the wettest year (1912).
	°F.	°F.	°F.	*Inches.*	*Inches.*	*Inches.*
December	47.6	82	3	4.70	4.60	7.63
January	45.3	81	6	5.03	3.55	4.74
February	47.1	84	−13	5.51	1.53	3.72
Winter	46.7	84	−13	15.24	9.68	16.09

Normal monthly, seasonal, and annual temperature and precipitation at Louisville, Winston County—Continued.

Month.	Temperature.			Precipitation.		
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year (1904).	Total amount for the wettest year (1912).
	°F.	°F.	°F.	*Inches.*	*Inches.*	*Inches.*
March	56.2	89	15	5.88	5.22	9.93
April	62.8	92	25	4.24	2.48	10.66
May	70.4	98	37	3.53	1.10	5.25
Spring	63.1	98	15	13.65	8.80	25.84
June	77.3	103	39	4.39	4.55	4.17
July	79.5	104	55	4.87	4.47	5.21
August	79.5	103	43	4.77	5.37	8.51
Summer	78.8	104	39	14.03	14.39	17.89
September	75.0	100	38	2.70	.22	4.72
October	63.8	99	26	1.90	T.	1.60
November	54.4	86	14	2.90	3.33	2.02
Fall	64.4	100	14	7.50	3.55	8.34
Year	63.2	104	−13	50.42	36.42	68.16

AGRICULTURE.

Farming has always been the leading industry in Choctaw County, but lumbering is of nearly equal importance. The uplands of Choctaw County were originally covered with forests, consisting mainly of shortleaf yellow pine, with some hickory, sweet gum, post oak, red oak, red cedar, Spanish oak, and other hardwoods. The forests were mostly open and free from underbrush. The forest of bottom lands included sweet gum, white oak, overcup oak, and water oak as the more important trees, with an admixture of cypress and many hardwood species and some shortleaf pine.

The early white settlers, traders, and hunters found many clearings in the uplands which were cultivated by the Indians. These settlers naturally turned to these spots to grow food crops. Corn was the first crop grown. Later a little cotton was grown and a few sheep kept to supply the materials for the manufacture of homespun. Tobacco, garden products, rice, wheat, and sugar cane were other products of the early days, although they were grown in a crude, haphazard sort of way. By 1840 agriculture may be said to have been fairly well established. The original land surveys made in the early thirties show a large number of cultivated fields scattered over the county.

Prior to the Civil War there were some large plantations in the county, but most of the land has always been farmed in comparatively small tracts by white farmers with the aid of a few negro hands. Big plantations did not develop here as on the black prairie land to the east and on the Mississippi Delta land to the west. The first land farmed was in the small well-drained bottoms; later, in turn, the sandy upland, the heavier upland soils, and finally the poorly drained bottoms were brought into cultivation.

Transportation was the greatest problem in the early days. Columbus, situated about 50 miles east, on the Tombigbee River, was the most important trading point. Some trading also was done in towns to the west along the Yazoo River. The general custom was to produce almost everything needed at home, and to make only one trip a year to market with some stock, cotton, and other products, bringing back a load of supplies.

At the beginning of the Civil War the county was in a prosperous condition and was developing very rapidly; at the end of the war its industry was more or less disorganized. During the reconstruction period a large proportion of the cultivated area was abandoned because of the unsettled condition of labor. Old fields with a 55-year growth of pine are a noticeable feature of the county to-day.

About 1875 conditions became more settled, and, with the advent of the railroads, agriculture was given a marked impetus. The growing of cotton increased very rapidly until the coming of the boll weevil in 1909. The census of 1880 indicates an area of 13,497 acres in cotton for the year 1879, on which 5,757 bales were produced. The same year there were 18,139 acres planted to cereals. In 1889, 18,576 acres of cotton were reported, representing an increase of over 5,000 acres in one decade. That year 4,964 bales of cotton were produced. The same year the area planted in cereals was 20,412 acres, which would indicate that they were of relatively less importance that 10 years before. In 1899, 8,370 bales of cotton were produced on 19,798 acres. In 1909 the acreage had increased to 22,932 acres, but the crop was only 6,366 bales. The same year 26,045 acres were reported in cereals.

Since 1909, owing to the ravages of the boll weevil, there has been a radical reduction in both acreage and yield of cotton, the 1920 census reporting a production of 3,218 bales on 11,682 acres. The cereal acreage also has been reduced with the reduction in the farming population.

The cotton crop was amost a failure for several years after the advent of the boll weevil and until methods of control had been devised. Now only the earliest varieties are grown, and long-season varieties, including all long-staple varieties, are no longer planted. Cotton growing on bottom lands also has been practically aban-

doned, the crop being confined to the uplands, and especially to the sandy soils, upon which the plants mature quickly. It is planted as early as possible, and more attention is given to fertilization and cultivation in order to hasten maturity. The most commonly grown varieties are King's Improved, Wannamaker's Cleveland, Trice, Simpkins, and Bank Account. A variety known locally as the "Jess Henry" is planted largely near Mathiston.

Cotton, like most other crops in the region, is grown almost entirely on ridges, called beds. The beds are about 40 to 46 inches apart. The land ordinarily is plowed some time in March or April by throwing together four furrows with a one-horse turning plow and breaking out the old middles with a middle buster, or two furrows are thrown together with a two-horse plow, a practice which is becoming more common, and the old middle broken up with a middle buster. Fertilizers are spread in the old furrows just before the land is plowed, so that it will be covered and will be directly under the new row. Often the fertilizer is spread in the bed just before planting. Very little flat breaking is done for cotton in the fall. There is some difference of opinion among farmers as to whether it is profitable, although it is generally conceded that it will increase yields if a cover crop is planted. The land washes badly unless protected by a cover crop. Farmers, however, have little time to plow in the fall, because of the press of work connected with the gathering of crops.

Cotton is usually planted from April 10 to May 1. It is planted for the most part with one-horse planters and is seeded very thickly, about half a bushel of seed being used per acre. It is often harrowed with a section harrow after planting. Various methods of cultivation are used. Two-horse walking cultivators are becoming common; riding cultivators are still rare. Ordinarily a "gee whiz" plow is used as soon as the cotton is up, and later the spring-tooth cultivator and the side harrow. It is usually chopped before the end of May. After chopping, a sweep or broad plow is often used, and after the cotton plants are about 10 inches high the heel sweep is used. Ordinarily four or five cultivations are given before the crop is "laid by" about the middle of July. Picking begins about September 1 and continues into late fall, or even into winter if delayed by bad weather. Yields vary greatly. Where farmers formerly obtained 1 bale per acre, they now, under boll-weevil conditions, feel fortunate if they get one-third to one-half bale per acre.

Corn has always had a larger acreage than any other crop in the county, although cotton has been of greater economic importance because it is the cash crop. Corn is now probably the most important crop of the county. During the last two decades not enough corn

has been grown ordinarily to supply the needs of the county. A surplus has been produced during the most favorable of the last five years. Apparently, however, there is a tendency to decrease the acreage in corn, more and more of the land being sown with lespedeza (Japan clover).

Most of the corn is planted on beds or ridges. As with the other crops in the uplands, the rows are made to follow the contours of the slopes. Much of the corn land in well-drained bottom and second-bottom areas is planted flat. Plowing extends over a considerable period, as corn may be planted at any time between the first of March and the last of June. Most of the plowing is done during the latter part of February and in March. Plowing is a little deeper than for cotton. The bulk of the crop is of the late-maturing varieties, and is planted in March if weather conditions are favorable. The seed is placed in drills, mostly with a one-horse planter None is planted in check rows. It is usually harrowed soon after the plants show above the soil, and after that is cultivated much the same as cotton except that cultivation is deeper.

The most common late-maturing varieties of corn are the Mosby and other prolific varieties, such as Hastings, Butts, Tennessee Red Cob, St. Francis Valley, and Vardaman. The Mexican June corn is the most popular early variety, although Hickory King and Reid Yellow Dent are sometimes grown. These are grown on wet lands where planting is delayed or follow oats or other winter crops. The Hickory King and the St. Francis Valley are often used on thin, unproductive soils. Most of the corn is grown on bottom-land soils of the Collins, Vicksburg, and Ochlockonee series. The yields range from 8 to 35 bushels per acre on the upland soils, and up to 40 or 50 bushels on the bottom-land types. The average yield for the county is probably between 14 and 20 bushels per acre. Practically all the corn grown is fed within the county. Much of it is used to feed the farm work stock, and almost as much to feed cattle and hogs. The quantity used in feeding meat animals is increasing. In favorable seasons some corn is sold locally to lumbermen to be fed to logging teams.

In the past the crop next to corn in importance has been oats, though there has been a gradual decrease in the acreage since 1890. According to the census of 1890, there were 4,200 acres of oats planted the previous year. In 1899 the acreage had fallen to 2,927 acres, in 1909 to 2,500 acres, and in 1919 to 1,883 acres. Many farmers say there has been a steady decrease in the yield, but census figures do not seem to corroborate this. The crop is usually grown in a rather haphazard manner. Seeding takes place from September to March. The seed is usually sown broadcast by hand at the rate of 1 to 1½ bushels per acre and harrowed in. The best results are obtained from seedings

made the last part of September or in October, but only a small proportion of the acreage is sown before the latter part of November, after the other crops have been gathered. The fall-sown crop is harvested the latter part of May, mainly with a cradle, and stored in sheds until fed. A flail is used to thresh out enough grain for seed. The Texas Rust Proof and the Hastings Hundred Bushel are the most popular varieties. The Pheba silt loam, Olivier silt loam, and well-drained areas of the Collins and Vicksburg silt loams are the soils on which most of the crop is produced. The yield ordinarily is about 8 to 10 bushels per acre.

Before the railroads were built into the county wheat was one of the more common crops. The census of 1880 reported the acreage for 1879 as 2,215 acres. In 1890 only 38 acres were reported and in 1919, 276 acres. The crop is grown to furnish flour for home use. Often the yields are only about 5 or 6 bushels per acre.

Lespedeza (Japan clover), a comparatively recent crop in the county, is becoming the most important one. The plant is said to have grown here wild since about 1880 or 1890, but its cultivation was not begun until about 10 years ago and the acreage has increased since then. Lespedeza is partly taking the place of cotton as the cash crop of the region. The gross returns per acre are not as great as with cotton, but one man can handle a much larger acreage and the cost of production is much lower than in growing cotton. Incidentally, lespedeza increases the productiveness of the land and helps to make other crops more profitable. The crop is grown both for the seed and for hay.

Lespedeza is usually sown by hand between the last of February and the first part of April, on land that has been well prepared. One bushel of seed is sown per acre. The seed is never covered. Sometimes oats are sown as a nurse crop about a month before sowing the lespedeza, but the usual practice is to sow alone. About the last of July and again late in September a mower is run over the field to clip the weeds and grass, the cut material being left on the ground. Harvesting is not begun until the plants are quite ripe and the seed thoroughly matured. A "lespedeza pan" is usually attached behind the cutter of the mower to save the seed. An average of about 5 bushels, now worth $5 to $6 a bushel, is saved from each acre, and sufficient seed shells out to reseed the land for next year. In following years only one cutting is made during the season, that made in the fall. The yield of hay per acre ranges from 1 to 2 tons, averaging slightly over 1 ton. The hay is cleaner and of better quality the second year than the first. Lespedeza is grown only on the bottom-land soils. It seems to make its best growth on a rather coarse, dark variation of the Collins silt loam, occupying slightly elevated areas near the stream channel.

Cowpeas were formerly grown to a great extent for hay, but lespedeza has now largely taken their place for that purpose. They are still grown for seed and to increase the productiveness of the soil. Where grown for seed the average yield is about 15 bushels per acre. The Whippoorwill is the most popular variety. Cowpeas seem to give the best results on the silt loam of the uplands.

Very few soy beans are grown. They do well and are very profitable when hogged down. Velvet beans are grown only in a small way, but the acreage is increasing annually. The early Speckled and Osceola are the only varieties grown.

Several farmers report having grown alfalfa with little success. It is said to do well on some of the bottom-land soils for about a year, or until the roots strike ground water, when the plants die.

Native grasses supply most of the pasturage and considerable hay. Carpet grass, crab grass, crowfoot grass, water grass, and broom sedge are the most common. The broom sedge makes fair hay if cut when about knee-high or before. Patches of Bermuda grass are common all over the county. It is by far the best pasture grass in the county, especially if combined with lespedeza. It is also of great value as a soil builder and should be planted on all the abandoned fields of the region to bind the soil and prevent washing.

Among the minor crops generally grown in small patches on every farm are sweet potatoes, sugar cane, sorghum, peanuts, Irish potatoes, a large number of garden vegetables, and some fruit.

The sugar cane is grown for sirup, which is made locally. This region is noted for the quality of the country-made sirup. The cane must be grown on selected soils to produce sirup of the best quality. All the Collins types and the Vicksburg and Ocklochonee sandy loams produce sirup of fine quality. The Vicksburg silt loam is said to give the largest yield of sirup, but the quality is not as good as of that from the other soils. A favorable location for the sugar-cane patch is on the Collins fine sandy loam or Vicksburg very fine sandy loam in the narrow bottoms. Sugar cane is usually fertilized with 200 pounds or more of acid phosphate and 100 pounds cottonseed meal per acre. Stable manure and muriate of potash are said to give the sirup a dark color. The yield of sirup ranges from 100 to 400 gallons or more per acre, with an average yield of about 150 gallons per acre. The acreage of sugar cane is increasing, as the crop is a profitable one. The demand for sirup is growing, and the crop appears to be a promising one for the county. Sorghum, being grown from seed, is sometimes much less trouble to grow than sugar cane, and for that reason is planted to a considerable extent, although it yields only about half as much sirup as sugar cane and the sirup is of poorer quality.

Sweet potatoes are grown at present only for home use, but they probably would be grown on a commercial scale if potato-curing houses[1] were available. The Nancy Hall, which seems to be a most valuable variety for this region, is becoming the most popular sort. Sweet potatoes seem to give the best results on the heavy silt loam soils of the uplands and terraces.

Irish potatoes are grown for home use. The greater part of the crop is planted in March, using seed brought from the North. The spring crop nearly always yields well, the best results being obtained on the Ruston and Orangeburg fine sandy loams. A later crop, planted in July, does not always yield as well, owing to the difficulty of procuring a stand. The later crop does best on a moist silt loam. The Red Triumph is the most common variety for early planting. The Red Triumph and Lookout Mountain are used for the late crop.

Peanuts are grown mostly for home use, but many farmers are beginning to grow them for hog pasturage.

The peach is by far the most common tree fruit in the region. Nearly all farmers grow peaches for home use. Many standard varieties are grown, but most trees are seedlings and the fruit is of relatively poor quality. Wild seedling peaches are quite common on the sandy upland soils. All peaches give the best results on the sandy loams. The Elberta and Chinese Cling are the most popular standard varieties. Pears were formerly grown to a much greater extent than at present. Most trees have been killed by blight in recent years. There are a few apple orchards which have been sprayed[2] and are doing well. Most farmers have a few vines of Muscadine grapes and a few fig trees, and some have small patches of strawberries. Wild plums, blackberries, and dewberries are very plentiful on all the upland soils. Improved varieties of the pecan have been planted in different parts of the county, and are apparently growing well. Some of the trees have begun bearing and are giving good returns.

Practically the same crops are grown in all parts of Choctaw County, but the proportions of the different crops vary with the soils and physiographic position. In a broad way the farms including much bottom land produce relatively more lespedeza, corn, and sugar cane, and less cotton, cowpeas, velvet beans, and sorghum than those composed mostly of upland soils.

On the uplands the rows of all crops are run around the hills along nearly level lines, the gradient being only sufficient to allow the rain

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[1] See Farmers' Bulletins, U. S. Department of Agriculture, No. 970, Sweet Potato Storage, and No. 847, Potato Storage and Storage Houses.

[2] Miss. Expt. Sta. Bul. 147, "Apple Growing in Mississippi."

Miss. Extension Dept. Bul. 4, "Practical Spraying for Practical Orchardists."

Extension Circular No. 23, "Mississippi Spray Calendar."

Extension Circular No. 1, "Fruit Varieties for Mississippi."

water to flow off gradually. On many farms the hillsides have been terraced. The destructive erosion of cultivated fields is a serious problem in this region owing to the steep slopes, heavy rainfall, and the peculiar structure of the soil. Most farmers fully recognize this and have taken steps to guard against it; but much land has been nearly ruined by erosion, part of it before the farmers had begun the practice of methods of prevention.

At the present time one-horse machinery is used by most of the farmers, though considerable plowing is done with two-horse plows. Practically all the cultivation of intertilled crops is performed with one-horse implements, and one of the greatest needs of the region is larger and better farm machinery. Two-horse cultivators, once the farmers have become accustomed to their use, will do better work and economize man power. Large plows, drawn by two or more mules, should be used in breaking the land. Six-horse plows are often used in other parts of the country in fields not any more favorable to their use than the bottom lands of Choctaw County.

The horses and mules used by the farmers in the county are mostly small. Mules predominate, since they are better adapted to the region. Most of them are shipped in, but many also are raised locally. The stallions and jacks used are not generally of the best type.

There are very few purebred cattle in the county, but many of the milk cows are grade Jerseys of good quality. The herds could be bred up to a satisfactory standard in a relatively short time by using purebred bulls, which can be safely imported, as the county has been tick-free for several years. More milk cows are being kept from year to year, as is indicated by the census, which reports 3,666 dairy cows on farms in 1910 and 8,529 in 1920. The number is yet too few to supply the local need for milk. The increased production of corn and forage crops is one factor causing an increase in the number of cattle kept. More cattle are needed to supply manure.

As in the case of milk cows, there has been a considerable increase in the number of hogs. The census figures indicate that 6,731 were in the county in 1909 and 8,025 in 1919. There has been great improvement in the quality of the hogs raised. The razorback is rarely seen, although his characteristics are still slightly visible in many hogs. Purebred herds are becoming quite common. The Poland-China seems to be the breed most common in the county, followed by the Duroc-Jersey. The increase in hogs is indicated by the fact that 9 carloads of hogs have been shipped cooperatively from Weir alone in the last 14 months, while before that there never had been a carload shipment from the county.

Chickens thrive here and are found in large flocks on most farms. The value of poultry and eggs reported by the 1910 census for the

previous year was $80,453, the value of animals sold and slaughtered was $160,378; and the value of dairy products sold was $91,103. The values given by the 1920 census are $134,703 for poultry and eggs produced and $144,245 for dairy products produced.

Very few farmers practice a systematic rotation of crops, although the same crop is not usually planted in the same field in successive years. Formerly cotton was often grown in the same field continuously. Now cotton and corn commonly are grown in alternate years, and the patches of sweet and Irish potatoes, cowpeas, oats, peanuts, and soy beans usually are planted on different parts of a farm every year. Land once planted in lespedeza is likely to stay in lespedeza for many years, but a crop of winter oats is often grown on lespedeza land. Oats sown on such land yield about 50 per cent more than the average for the county and the crop does not interfere with the self-seeded lespedeza, nor apparently affect the yield of the latter crop.

Bur clover, crimson clover, and hairy vetch have been tried for winter crops in rotation with summer crops such as corn and cotton. They are grown mostly for winter grazing, but are probably most valuable as cover crops to increase the fertility of the soil. They keep the land from washing, and, being legumes, they take nitrogen from the air and store it in the soil. They all do well.

Winter rye is also used in rotation with summer crops. It is a good soil binder and makes valuable pasturage. The Abruzzi is considered one of the best varieties for use in this region.

The use of commercial fertilizer has increased since 1880. The census of that year reports the value of the fertilizers used as $395. It had increased to $5,362 in 1890, to $7,500 in 1900, and to $37,089 in 1910, but dropped to $21,967 in 1920. The decrease in cotton acreage during the last decade accounts in part for the smaller expenditure. The high prices prevailing in 1919 may also have caused a decrease in the quantity used.

At first cottonseed meal was most commonly used. It was gradually displaced by mixed fertilizers consisting of acid phosphate, nitrogen, and potash salts. Owing to the high price of potash and cottonseed meal, acid phosphate has been the fertilizer most commonly used in recent years. Basic slag, supplying both phosphoric acid and lime, is being used in large quantities for the first time in 1920. Nitrate of soda was used to an important extent for the first time the same year.

Ordinarily no fertilizers are used on the stream-bottom soils, except for sugar cane. The same kinds of fertilizers have been used on the different soils. The prevailing acreage applications have been about 200 pounds for cotton and about 100 pounds for corn. The needs of the individual soils are discussed under the descrip-

tion of the soil types. All the soils of the county are deficient in organic material. This deficiency can be overcome to a considerable degree by growing velvet beans, cowpeas, soy beans, and winter cover crops, and by raising more live stock. Applications of lime probably would be profitable, if it could be obtained at a reasonable price. All the soils are deficient in lime.

Most of the labor on the farms is done by the farmer and members of his family. Negro farm laborers were formerly abundant, but there are now comparatively few available in the county. The negroes who still remain prefer to work in the sawmills or else to farm as tenants. Farm wages are now (1920) about $2 a day until the cotton-picking season begins, and about $1.50 per hundred pounds for picking cotton. The local sawmills pay $3 or $4 a day. Conditions as to labor are now unusual and may change radically within a short time.

The census figures indicate a decrease in the average size of farms from 125.1 acres in 1880 to 92.1 acres in 1910. The average size is reported by the 1920 census as 104.2 acres. The census classes each tenancy as a farm, and the apparent increase in size in the last decade is due to the fact that so many tenants have left the county. A large number of the individual holdings contain about 160 acres; there are only a few large holdings, and they are mostly for the timber. The census of 1910 reports 89.7 per cent of the area of the county in farms and 41.4 per cent of improved land in each farm. In other words, 37.1 per cent of the county was improved. The census of 1920 reports 86.1 per cent in farms and 34.5 acres of improved land per farm. From 1890 to 1910 there was a rapid increase in the amount of land farmed by tenants. It increased from 17.7 per cent in 1890 to 36 per cent in 1900 and to 60.5 per cent in 1910. Since 1910 there has been a relative decrease in the amount of land farmed by tenants. The census of 1920 reports 34 per cent of the farms as operated by tenants. The share system is the most common. The tenant usually furnishes the work stock and implements and gets three-fourths of the cotton, two-thirds of the corn, and free use of land for a garden, potatoes, a patch for sugar cane, and more or less pasture.

Many farms are rented for cash, the rate ranging from $2 to $5 an acre, depending on the land and on the ruling price of farm products.

The present value of uncleared land, without the timber, is from $5 to $8 an acre, but ranges as high as $20 in favorable locations, especially in the well-drained bottoms. Cleared upland is valued at $6 to $15 or more an acre and cleared bottom land from $10 to $30 or more an acre. Land values have increased from 25 to 100 per cent during the last year or two.

SOILS.[3]

Choctaw County lies entirely within the Coastal Plains Province. There are three well-defined soil divisions: (1) Upland, or old sedimentary and loessial soils; (2) old stream alluvium, the terrace or second-bottom soils lying above normal overflow; (3) recent stream alluvium or bottoms subject to overflow.

The upland soils are derived from unconsolidated sands and clays of the Eocene division of the Tertiary formation, represented in this county by the Ackerman clay and Holly Springs sand formations, and from the Brown loam formation of the Pleistocene.[4]

The Ackerman clay formation consists mostly of well-stratified, stiff, gray or bluish-gray clays with some interstratified buff-colored sandy clays and occasional beds of lignite. It weathers to a mottled red and gray stiff clay, which is the typical subsoil of the Susquehanna series of soils.

The Holly Springs sand is the most extensive formation in the county. It includes beds of unconsolidated sands and sandy clays of various colors. These beds are cross-bedded and irregularly stratified. The Ruston, Orangeburg, Kirvin, and to a limited extent the Susquehanna soils, are developed on this formation.

The Ruston soils have a very light grayish brown to gray soil and are underlain by a yellowish-red to dull-red, moderately friable subsoil consisting prevailingly of sandy clay. The lower subsoil is sometimes slightly mottled with gray. The Ruston series is the most extensive of any of the upland soils.

The Orangeburg soils are similar to those of the Ruston series, except that the Orangeburg subsoil is a red very friable sandy clay, quite free from mottlings.

The Kirvin series holds an intermediate place between the Ruston and Susquehanna. The soils are light brown to gray, and the subsoil is mostly a slightly mottled, reddish-brown, moderately friable, heavy sandy clay. Yellow layers and mottlings are common in the lower subsoil. Ferruginous sandstone gravel is common in this series.

The Brown loam formation, which covers about one-fifth of the area of the county, occurs as a veneer overlying the other formations. It consists of a fairly uniform deposit of yellowish-brown to orange-brown silt loam to silty clay loam, slightly mottled with gray, and ranging in thickness from a few inches to about 8 feet. The forma-

[3] The soils as mapped in Choctaw County do not join in detail with those of the older adjoining surveys. This is due in part to the fact that considerable less detail was undertaken in the old surveys and in part to changes made in the names of some of the older soils, several new series having been established with gain in knowledge of the soils of this general region.

[4] The names of the geological formations in this report are based on the work of the Mississippi Geological Survey. See Miss. Geol. Survey Bul. 14, by Dr. E. N. Lowe, director, Jackson, Miss.

tion gives rise to the Pheba series. One type, the Pheba silt loam, was mapped. The origin of this formation has not been definitely settled. It is usually considered a loessial deposit. Apparently it formerly covered the greater part of the uplands, but has largely been eroded away, the principal bodies remaining occurring on rather smooth surfaces. One result of this more or less superficial deposit is to give marked variability to the soils of the county.

The second-bottom soils are represented by the Olivier series. The Olivier resembles the Collins series, but is situated above normal overflow and is more completely weathered. It was deposited before the streams had cut their channels to their present depths. The material appears to be derived from the Brown loam formation.

The recent alluvial soils occupy the level, frequently overflowed bottoms, the proportion of which is relatively large in this county. The bottoms range in width from more than a mile along Big Black River to only a few rods near the heads of the smaller streams. These bottom lands have predominantly silty soils, even where the uplands of the sections in which the streams rise are all sandy Coastal Plain soils. This may indicate that the thin covering of silt common over much of the region formerly capped all of these sandy uplands, but has been washed away and redeposited in the bottom land. Soils of three series, the Ochlockonee, Collins, and Vicksburg, are mapped in the bottoms.

The Ochlockonee series is represented by only one type, the fine sandy loam. The type is variable and is derived from Coastal Plain material. The soil is brownish and the subsoil often consists of alternating layers of reddish brown, red, and gray.

The types in the Collins series have grayish-brown to brown soils and a light-gray, slightly mottled subsoil, usually very compact in the lower part of the 3-foot profile. These soils are most typically developed on the bottoms of the Big Black River system in the northern part of the county. Three types are mapped, the fine sandy loam, silt loam, and silty clay loam.

The types included in the Vicksburg series have light-brown to brown soils and a mottled gray and brown subsoil. Two types are mapped, the very fine sandy loam and silt loam. The materials forming these soils come partly from Coastal Plain and partly from the Brown loam deposits. Particles of lignite are common in the soil and subsoil. The series occurs mostly in bottoms along streams which rise in the hillier part of the county, and a large proportion of the alluvium is Coastal Plain material. The soils of the Vicksburg and Collins series can not be definitely separated in this area, as they usually grade one into another.

The soils of Choctaw County are grouped in 9 series on the basis of origin, color, topography, and structural characteristics. The

series are divided into soil types on the basis of texture, or the proportion of coarse and fine particles of which the various soils are composed. Sixteen types are shown on the map. The names and the actual and relative extent of these soils are shown in the table below, and their relation to agriculture is discussed in the following pages of this report.

Areas of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Ruston very fine sandy loam	49,472	18.7	Olivier silt loam	5,760	2.2
Pheba silt loam	49,216	18.6	Kirvin silt loam	5,312	2.0
Collins silt loam	46,784	17.7	Ruston fine sand	1,728	.6
Susquehanna silt loam	44,672	16.9	Collins fine sandy loam	1,280	.5
Ruston fine sandy loam	19,136	7.2	Susquehanna clay	960	.3
Kirvin fine sandy loam	11,200	4.2	Ochlockonee fine sandy loam	512	.2
Orangeburg fine sandy loam	11,136	4.2	Vicksburg very fine sandy loam	384	.1
Vicksburg silt loam	10,560	4.0			
Collins silty clay loam	6,848	2.6	Total	264,960	

SUSQUEHANNA SILT LOAM.

The Susquehanna silt loam is a light-brown to grayish friable silt loam, grading at 5 or 6 inches into a pale-yellow silt loam, which extends to a depth of 8 to 18 inches, where it is underlain by red, or mottled red and yellow, plastic, heavy clay. The lower subsoil is mottled red and bluish gray to light gray, or red, yellow, and gray. In places the upper subsoil is a yellowish-red to red clay and the lower subsoil a grayish-yellow or reddish plastic clay. Occasionally a very stiff plastic clay, locally known as "soapstone," occurs at depths of 24 to 36 inches. Fragments of platy ferruginous rock are common in places. Some areas are rocky; such areas are indicated on the map by rock-outcrop symbols. Ordinarily the rocky areas have a less plastic subsoil than the rest of the type, representing an inclusion of or an approach to the Kirvin soil. The thickness of the yellow subsurface layer is commonly greatest on areas contiguous to bodies of the Pheba silt loam. There are some included small areas of Pheba silt loam and there are many eroded areas on cultivated slopes where the clay is exposed at the surface. This clay is universally exposed in the roads as the wheelruts are soon cut through the surface layer of silt loam in wet weather. The roads on this type are usually very bad, being almost impassable in wet seasons. The type is locally known as "jointed clay" or "red gumbo" land.

The Susquehanna silt loam is the predominating upland soil in the eastern and northeastern parts of the county, where it occurs at all elevations. It also occurs in scattered bodies, mostly on outcrops,

at the lower elevations near stream bottoms in other parts of the county. The most typical areas have been formed by the weathering of the Ackerman clays with some traces of the Brown loam formation on the surface.

The Susquehanna silt loam includes some of the hilliest areas in the county, and nearly all of the type is rather hilly. It is developed largely on the steep slopes along the stream bottoms. The more nearly level upper slopes are more commonly occupied by soils of the Pheba or Ruston series. The surface is favorable to drainage, but the heavy plastic subsoil hinders underdrainage and gives the type a low water-holding power, making it droughty. The poor underdrainage also makes the type susceptible to erosion, as it increases the run-off. Where the surface soil has been removed the Susquehanna clay is developed, and there are small areas of this soil that have not been shown separately. The texture of the surface soil in places varies to very fine sandy loam.

Only 5 to 10 per cent of the type is now cultivated, though probably 25 or 30 per cent of its area has been farmed at some time in the past. More of this soil has been abandoned than of any other type in the county. The abandoned area is especially large in the southeastern part of the county in the central part of T. 16 N., R. 11 E. Most of this land has become badly eroded through failure to apply protective methods in farming.

Shortleaf yellow pine, hickory, post oak, Spanish oak, and other trees common to the upland of the region grow on the Susquehanna silt loam.

Corn is the most important crop. Cotton is rather late on this soil, and is not so extensively grown as on the Ruston soils. Corn yields about 13 bushels per acre on the average, but may yield as high as 40 bushels in favorable years. Cotton shows almost as wide variation in yields. Sweet potatoes seem to do well, but Irish potatoes apparently do not thrive. Bermuda grass does exceptionally well and should be used to protect the steep slopes from washing.

This type is difficult to cultivate. It is very sticky and hard to work when wet and refractory when dry. The slopes are steep and rather high ridges are needed along contours to prevent washing. To form these ridges deep furrows are made which extend down into the clay. All the type is now farmed on the contour or terrace system.

Mixed fertilizers have been used on this soil until the last few years, usually at the rate of about 200 pounds per acre. More recently acid phosphate has been the most common fertilizer, and the soil responds well to it.

This type is valued at $5 to $12 an acre without the timber, the price depending on improvements, distance from markets, and the condition of the land.

Most of the Susquehanna silt loam is better suited to forestry than to farming. The soil is deficient in organic material. This can be supplied by growing summer crops of cowpeas and velvet beans, and winter cover crops of bur clover, crimson clover, and hairy vetch. More organic material would loosen up the soil, increasing its capacity to hold water, and making it more drought resistant. Ground limestone would improve the structure of the soil and make it more friable and easier to handle, as well as supply a possible deficiency in lime needed for plant food. Acid phosphate at the rate 200 to 400 pounds per acre would probably be the most profitable commercial fertilizer, used in connection with leguminous crops to supply the nitrogen.

There are included with the Susquehanna silt loam several small areas of Susquehanna very fine sandy loam. The principal bodies lie three-fourths mile south of Bethlehem Church, 1 mile north of Sherwood, 1¼ miles northwest of Nebo Church, and one-half mile south of Williams Hill. The difference between the very fine sandy loam and the silt loam is not great, either in texture or agricultural value.

SUSQUEHANNA CLAY.

The Susquehanna clay has developed through erosion of the Susquehanna silt loam. The color of the soil varies considerably because of the eroded nature of the land, the different layers of the subsoil being exposed in different places. A layer 2 or 3 inches in thickness on the surface is often weathered to a light brownish red, rather friable clay, but the soil in most places is a red or mottled red, gray, and yellow refractory clay, varying in depth from 2 or 3 inches to 18 or 30 inches. Below this upper layer is a bluish to greenish-gray, very stiff, plastic clay. In places the upper subsoil is a yellowish-red to red clay, and the lower subsoil a grayish-yellow or reddish-yellow clay. Platy ferruginous sandstone fragments appear on the surface in many places. Small areas of Susquehanna silt loam are included within the type, the types being so intermingled in places that it is difficult to separate them.

The Susquehanna clay is of very small extent. Only a few bodies were mapped, near the eastern and northern boundaries of the county.

The topography is rough and gullied, narrow washes and gullies being the most characteristic feature of the type. The surface drainage is excessive, but the underdrainage is poor, owing to the impervious nature of the subsoil.

Only 3 or 4 per cent of the type is cropped at present, although 60 or 70 per cent has been in cultivation at some time. Probably a third of the old fields are covered with grass and briers and used for pasture. The rest of them have a young growth of pine. The original forest was of the same type as the silt loam. The crops grown are those most common on the uplands. The Susquehanna clay is held at $4 to $10 an acre.

RUSTON FINE SAND.

The surface soil of the Ruston fine sand consists of a brownish-gray to brown loose fine sand, with an average depth of 7 inches. The subsoil is a brownish-yellow to reddish-yellow fine sand to a depth of 30 or 40 inches, where it grades into a red fine sandy clay. The soil in cultivated fields has a decidedly grayish cast; in forested areas it is light brown to brown. Some areas contain stones and gravel; others are free from coarse material.

Somewhat less than 3 square miles of this soil occurs in the county. The individual areas are small and are situated mainly in the west-central part of the county. The areas have a gently rolling to rolling surface and good surface drainage. The underdrainage is excessive, and the conditions are not so favorable for the ordinary farm crops as for early truck crops.

About 55 per cent of the land of this type is cultivated. The rest supports a fairly clear growth of shortleaf pine, though there are some blackjack oak, Spanish oak, and other hardwoods and cedar.

The Ruston fine sand is used for all the ordinary crops of the region. The acreage of cotton is proportionally larger on it than on the other soils. Cotton ordinarily yields about one-fourth bale per acre and corn 10 or 12 bushels. The soil is especially adapted to the production of watermelons. The land must be fertilized well to give good results with any of the crops.

This land sells at $10 to $20 an acre, the price depending largely on the distance from markets.

RUSTON FINE SANDY LOAM.

The Ruston fine sandy loam consists of very light grayish brown fine sand or loamy fine sand to grayish-brown or light-brown fine sandy loam, passing into reddish-yellow or grayish-yellow fine sandy loam, and underlain at 4 to 14 inches by a subsoil of yellowish-red or dull-red, friable fine sandy clay. This material may extend to a depth of 36 inches, or rest above this depth upon a fine sandy loam or sandy loam. In places there is some yellow and occasionally a little gray mottling in the lower subsoil. Many small areas of Orangeburg fine sandy loam having a red fine sandy clay subsoil

are included within the type. These areas are found about the heads of ravines and on the steeper better drained slopes. Considerable quantities of brownish-red, ferruginous sandstone and fragmentary gravel of this rock are found on many areas. More stony areas have been indicated on the map by rock-outcrop symbols. In such areas the subsoil varies considerably; yellow mottlings are more frequent and the lower part is in places a brownish-red very fine sandy clay or clay.

Areas of Ruston fine sandy loam occur in nearly all parts of the county but are most numerous in the southern part. The surface is rolling to hilly. The hillier areas include those along Sand Creek in the east-central part of the county. Probably 10 per cent of the type is so hilly that it should not be cultivated. In many of the old fields much of the surface soil has been washed away and the clay exposed. Such fields are usually stony.

Both surface drainage and underdrainage are good to excessive, and the soil is inclined to be droughty.

About 20 per cent of the type, it is estimated, is under cultivation at the present time. Perhaps 15 per cent more has been in cultivation and abandoned. A heavy growth of open forest originally covered all the type. Spanish oak, hickory, blackjack oak, post oak, red oak, and other hardwoods are also common. Red cedar is especially plentiful in the rough areas.

Cotton gives better yields on this type than most of the other crops, as it is rather more resistant to drought. About 30 per cent of the cultivated area is devoted to cotton and about 45 per cent to corn. The maximum yield of cotton is about two-thirds bale, and the average yield about one-fourth bale per acre. Corn ordinarily yields 10 or 12 bushels per acre. It is one of the best soils for growing fruit and vegetables in the county. Peaches seem to do especially well in the home orchards. Commercial fertilizers are used on most of the crops grown, the soil responding well.

The Ruston fine sandy loam is held at $6 to $20 an acre, the price depending on the location with respect to railroads, on the character of the improvements, and on the condition of the land.

The Ruston fine sandy loam needs terracing to prevent destructive washing. Terraces should be carefully laid out, preferably by an engineer, and should be substantially built, so that they will be permanent. In other steps for improvement of this soil the same methods should be employed as in improving the Ruston very fine sandy loam.

RUSTON VERY FINE SANDY LOAM.

The typical Ruston very fine sandy loam consists of light grayish brown to grayish-brown very fine sandy loam, passing at 6 to 10

inches into yellow or reddish-yellow very fine sandy loam, and this at 10 to 14 inches into dull-red, or yellowish-red to reddish-yellow, friable sandy clay. The subsoil usually is more sandy in the lower part, and in places the material may have a fine sandy loam or a loamy fine sand texture. In places the lower subsoil, even where more sandy than the upper part of the subsoil, is slightly compact.

A variation of this soil has a mottled, reddish-yellow or yellowish-red, yellow, and gray subsoil, resembling in color the subsoil of the Susquehanna series, but differing from it in texture, being a sandy clay rather than a heavy clay. This mottled material is more plastic than the typical Ruston subsoil, but not so plastic as the subsoil of the Susquehanna. There are included with this Ruston soil some patches of Pheba silt loam, or very fine sandy loam and a few of Susquehanna silt loam. In many places, especially in the northwestern part of the county, there are areas in which the bodies of Ruston fine sandy loam and very fine sandy loam are so intricately mixed that it was impracticable to separate them on a map of the scale used in the present survey. In such places much fine sandy loam soil has been included with the very fine sandy loam.

The Ruston very fine sandy loam occurs in nearly all parts of the county, but it is more extensively developed in the central and southern parts of the county than in the northern part. It is mainly associated with the Pheba silt loam and the Ruston fine sandy loam, and was mapped as an intermediate type between them in many places where a very thin layer of very fine sandy to silty material, like that forming the Pheba soils, extends over a sandy clay subsoil.

The Ruston very fine sandy loam is gently rolling to rolling, with very little of the surface too rough for cultivation. More of it is found on the tops of the hills than on the hillsides. The surface drainage is good to excessive, and the underdrainage thorough. The fine sandy clay subsoil allows the excess surface water to percolate through it, but retains enough to supply the crops.

The Ruston very fine sandy loam ranks close to the Pheba silt loam in agricultural importance. It is considered as productive as the Pheba silt loam and is easier to cultivate, but is more hilly and consequently the proportion of the land farmed is somewhat less. It is estimated that between 25 and 35 per cent is cultivated. The forested areas consist chiefly of a thick growth of shortleaf yellow pine. There is more or less hardwood growth also, consisting principally of post oak, red oak, Spanish oak, blackjack oak, hickory, dogwood, and holly. Blackberry is very abundant and wild plum common.

A larger acreage is planted to corn than to any other crop. Probably 50 per cent is devoted to corn in an average year. Cotton

ranks next to corn in acreage, and more cotton is grown on this than on any other type in the county. It is considered an ideal soil for cotton under boll weevil conditions. It dries out early in the spring, which allows early planting, and it is just sandy enough to hasten ripening, without being droughty. Corn, cowpeas, sweet potatoes, the spring crop of Irish potatoes, peaches, and most vegetables do well, and are more extensively grown on this than on any other soil in the county. All the other crops grown in the uplands do well. The type is cultivated in the same manner as other upland soils. The intertilled crops are planted on beds.

The Ruston very fine sandy loam sells at $6 to $35 an acre, the average value being about $12 an acre.

As in the other upland soils, organic matter and nitrogen are deficient. These can easily be supplied, because soy beans, cowpeas, velvet beans, peanuts, and the winter legumes do especially well on this soil. Ground limestone probably would benefit these crops. The amount necessary should be determined by experiment. Probably 3 or 4 tons would not be excessive for a first application.

ORANGEBURG FINE SANDY LOAM.

The Orangeburg fine sandy loam consists of a layer of grayish-brown or light-brown to slightly reddish brown fine sand to fine sandy loam passing into reddish fine sandy loam, underlain at 6 to 14 inches by a subsoil of red friable sandy clay, to 36 inches, the lower part in many places being coarser than the upper part. The subsoil material is sufficiently coherent to stand in smooth perpendicular walls in road cuts and in gullies. The type is intricately mixed with the closely related Ruston fine sandy loam, and boundaries between the two soils are drawn rather arbitrarily in places. The Orangeburg fine sandy loam more typically occupies the areas of rougher topography. Bare red spots, where the soil has been washed away, exposing the subsoil, are very common. Several areas of very fine sandy loam texture are included with this type, owing to their small extent.

The Orangeburg fine sandy loam is developed mostly in the western and southern parts of the county. It is derived from the more sandy, well-drained clay beds of the Coastal Plain deposits. The surface is gently rolling to hilly. The surface drainage and underdrainage are very good. The subsoil has about the right admixture of sand and clay to make the land wash badly, unless the fields are very carefully terraced.

It is estimated that 15 per cent of the area of this type is cultivated at the present time. About 15 per cent more has been cultivated, but is now covered with young pine. The original forest is practically the same as that on the Ruston fine sandy loam.

The Orangeburg fine sandy loam is considered more productive than the Ruston fine sandy loam, but proportionally less of it is cultivated because it is so hilly. The same crops are grown as on the Ruston fine sandy loam, and about the same or slightly higher yields are obtained.

This Orangeburg soil needs to be fertilized to produce profitable crops. It responds especially well to acid phosphate and to nitrates. Cottonseed meal and tankage have been used as a source of nitrogen in the past, but nitrate of soda is beginning to be used instead, the organic materials being used more and more in the manufacture of feeds.

The Orangeburg fine sandy loam is held at $6 to $20 an acre, the price depending upon the condition of the land, the character of the improvements, and the distance from markets.

This soil needs very careful terracing to prevent washing. More leguminous crops should be grown to build up the humus and nitrogen content of the soil.

KIRVIN FINE SANDY LOAM.

The surface soil of the Kirvin fine sandy loam is a very light grayish brown to light-brown fine sandy loam 4 to 10 inches deep. This layer is succeeded downward by a yellowish or rusty-brown to reddish-brown, compact, but friable, fine sandy clay to silty clay, next by a red, stiff, fine sandy clay to silty clay, and then by a red, stiff, fine sandy clay to clay with some yellow mottling to a depth of 24 to 36 inches or more. The brown subsurface layer is often wanting and the lower subsoil may be a mottled brown, gray, yellow, and red friable fine sandy clay to clay loam. The subsoil in general is stiffer than that of the Orangeburg or Ruston soils, though more friable than that of the Susquehanna series.

Both the soil and subsoil vary greatly. The type is intermediate between the Susquehanna, Ruston, and Orangeburg series. In surface appearance it is like Susquehanna, but it has a subsoil of more friable structure. Fragments of ferruginous sandstone are common in both soil and subsoil, and this is one of the most characteristic features of the type.

The Kirvin fine sandy loam is found in all parts of the county, but is most extensively developed in the southwestern part.

The surface is gently rolling to rolling. Very little of the type is too rough to be cultivated. The surface drainage and underdrainage are good.

It is estimated that about 20 per cent of the type is cultivated. About 10 per cent more once cultivated has been allowed to revert to natural conditions, and is now covered with a young growth of pine. The areas that have never been cleared support a good forest,

mainly of shortleaf yellow pine. The best timber has, however, been cut. Cedar, Spanish oak, black oak, hickory, post oak, and many other hardwood trees appear in the forest growth.

Corn occupies the largest acreage of any crop on this soil, but the type is also one of the soils selected in growing cotton. The yields of the latter are about the average for the county, and of corn somewhat less.

This type is plowed in ridges following the contours of the slopes. It must be handled carefully to prevent erosion, as it washes easily. The subsoil where exposed is unproductive. Annual applications of commercial fertilizers are used on most of the type.

The Kirvin fine sandy loam sells for $4 to $25 an acre. The average value is $12 or $15 an acre.

KIRVIN SILT LOAM.

The soil of the Kirvin silt loam is a grayish-brown to light-brown silt loam, 6 to 12 inches deep. The upper subsoil is a reddish-brown to brownish-red or red silty clay loam or clay marked in many places with yellowish and grayish specks and mottlings. The lower subsoil is commonly a brownish-red silty clay showing some mottling of yellow and gray, and having a somewhat more friable structure than the overlying red layer. In some of the flatter areas the lower subsoil may be a yellow silty clay more compact than the average. Ferruginous rock fragments are commonly present. In spots the silty surface layer has been partly washed away and the upper subsoil exposed. These spots were not of sufficient extent to be separated as the Kirvin clay loam. There are some included areas having a more friable red subsoil. These approach closely or actually represent included Orangeburg silt loam or very fine sandy loam. The areas of these are not large or important.

The Kirvin silt loam is mapped in scattered areas, mostly in the southern part of the county. It is closely associated with the Susquehanna silt loam and the Kirvin fine sandy loam, and the boundaries between these soils are not distinct.

The surface is mostly gently rolling, but some parts are rolling to hilly. Surface drainage is good to excessive and underdrainage good. Some of the old fields have had part of the surface soil washed away in spots, but none of the type is badly gullied.

About 15 per cent of the type is cultivated, it is estimated, and about 5 or 10 per cent more has been cultivated but is now abandoned. The forest growth consists mostly of pine, with an admixture of some Spanish oak, dogwood, hickory, blackjack oak, post oak, red oak, sweet gum, black gum, cedar, and other trees.

The crops commonly grown in the upland are produced. The yield of cotton is about the average for the county, and of corn about 10 to 12 bushels per acre. All crops are planted on ridges following the contour of the slopes. More or less commercial fertilizer is used in growing all the crops. In some sections of the country, as in Howard County, Ark., peaches are successfully grown on the Kirvin soils. Lespedeza probably would do well, particularly on the more nearly level areas.

PHEBA SILT LOAM.

The surface soil of the typical Pheba silt loam consists of 6 to 10 inches of loam to silt loam, light gray or grayish brown throughout, or consisting of an upper layer of these colors and a subsurface, especially in forested areas, of pale yellowish gray or grayish yellow. The subsoil is a yellowish-red or reddish-yellow to yellow, moderately friable silty clay, which grades downward into a yellow or brownish-yellow silty clay loam with faint light-gray mottlings. The yellow color becomes more pronounced with depth, and the material at an average depth of about 24 to 26 inches is a compact silty clay loam or heavy silt loam, mottled yellow or pale yellow and light gray, containing in many places lumps of grayish silty clay more plastic than the bulk of this lower subsoil material. In some cases there is a little reddish-yellow mottling in the lower subsoil, and there is present some rusty-brown or dark-colored concretionary material. In the lower subsoil, and especially in the substratum, concretions are quite noticeable in road-cut sections of some areas. The subsoil having the yellow upper layer is found in those areas which apparently are somewhat deficient in drainage, as in those areas lying on the lower slopes and in level flats. In such situations the layer with the gray mottling and compaction is encountered nearer the surface. There is in places a noticeable amount of fine sand or very fine sand in the lower subsoil.

The type as mapped includes many small areas which consist of very fine sandy loam. There are also eroded patches of clay loam or silty clay loam, which in cultivated fields give the land a patchy gray and reddish color. There are also included small areas of Susquehanna silt loam and Ruston very fine sandy loam.

The Pheba silt loam resembles somewhat the Ruston soils, having in the better drained situations a yellowish-red upper subsoil like that of the Ruston; but there are three outstanding differences between the typical Pheba and the typical Ruston, namely, (1) the lower subsoil of the Pheba (about the lower half) is mottled yellow and light gray, there rarely being as much red color in this part as is common in the Ruston; (2) the lower subsoil is characteristically compact, often so much so that the material is practically dry in

the lower part of the 3-foot section even after protracted wet seasons, and is so hard in very dry weather that it is difficult to bore down to 3 feet; and (3) the upper subsoil has a definite silty clay texture, whereas the upper subsoil of the Ruston is a sandy or fine sandy clay.

The Pheba silt loam resembles also the Olivier silt loam in many respects. It has the same compact impervious layer in the subsoil, and the same gray mottlings and dark-brown concretions in the subsoil. The subsoil of the Pheba, particularly the upper part, is more distinctly weathered, however, and more brownish in color than the Olivier silt loam. The Olivier is found only on level terraces and the Pheba on the uplands.

The Pheba silt loam is known locally as "mulatto land" or "mulatto clay land." It is one of the most extensive types, important areas of it being found in nearly all parts of the uplands of the county. Its lower boundaries are marked by a distinct rise in elevation from the bottom land or terrace types. It extends up the gently rolling slopes, the areas becoming more scattered and commonly less typical at increasing distances from the main stream bottoms. Near the main bottom it may extend in an almost continuous body. Several miles away it is more apt to be found only on the comparatively level tops of the ridges. It is not usually developed near the smaller tributaries, because there the upper silty layer, or the Brown loam formation from which it has been derived, has been eroded away. On the higher elevations the boundary between the Pheba silt loam and other upland types, particularly the Ruston very fine sandy loam, is indistinct and irregular. One type grades into the other and sharp lines of separation can not everywhere be drawn.

Most of the Pheba silt loam has an undulating to gently rolling topography, and practically none of it was originally too rough to be farmed. Some parts now are considerably gullied, particularly bordering the stream bottoms or the Ruston or Orangeburg soils, where the substratum is a sandy clay. Conditions here are very favorable for gullying, owing to the relatively impervious soil and the easily eroded sandy clay substratum.

The surface drainage is almost ideal for this region, there being usually just enough slope to give good surface drainage and not enough to cause washing where the rows follow contours. The underdrainage is poor, owing to the compact and relatively impervious layer in the subsoil. The surface water has difficulty in percolating into the deep subsoil. This is an objectionable feature, because it reduces the water-storing capacity of the subsoil and makes the type less drought resistant. Also the internal movement of moisture in general and the circulation of air probably are impeded by this compact stratum.

The Pheba silt loam is the most important agricultural soil of the county. A larger proportion of it is farmed than of any other important upland type. This is very likely due more to the favorable topography than to any inherent difference in fertility. About 50 per cent is under cultivation. Shortleaf yellow pine is the most common tree in the forest cover, but all the hardwoods common on the uplands of the region are present. Post oak and red oak are more common than the other oaks. An unusually large number of wild plum trees are found on the type. Dogwood, sweet gum, hickory, magnolia, persimmon, black gum, cherry, sycamore, black walnut, and cedar are prominent among the hardwood species.

Probably 60 per cent of the Pheba silt loam in cultivation is planted to corn in a normal year. The yield averages about 13 or 14 bushels per acre, although as much as 45 bushels is obtained under the most favorable conditions of season and culture. Cotton is next in importance to corn. The acreage and yield vary greatly. The average yield is about one-fourth bale per acre. Oats seem to give better results on this than any other upland soil. The yield of sweet potatoes is higher than the average for the county.

The Pheba silt loam, considering its heavy texture, is easy to cultivate. It is naturally friable and easily worked during the summer. In the winter it becomes very soggy, and roads are then almost as bad as on the Susquehanna soils. Commercial fertilizers are almost invariably used on all crops grown on this soil.

The Pheba silt loam is valued at $8 to $35 an acre, the average value for improved areas being about $16 an acre.

This soil, like the other upland soils of the region, is deficient in organic matter. More velvet beans, cowpeas, or soy beans could be grown to advantage in rotations. Winter cover crops, like bur clover and crimson clover or hairy vetch, should also be included more generally in the cropping systems. These would supply nitrogen and humus. The State experiment station recommends sowing cowpeas in early corn at the last cultivation before the corn is "laid by" on soils such as this.

The following table gives the average results of mechanical analyses of samples of the soil, subsurface, subsoil, and lower subsoil of the Pheba silt loam:

Mechanical analyses of Pheba silt loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
424006, 424035.	Soil	0.4	0.4	0.4	3.3	7.6	73.9	14.0
424007, 424036.	Subsurface	.0	.1	.1	2.7	8.2	64.1	24.5
424008, 424037.	Subsoil	.0	.2	.9	4.4	9.1	63.4	21.9
424038.	Lower subsoil	.0	.0	1.2	5.7	8.5	64.0	20.5

OLIVIER SILT LOAM.

The Olivier silt loam is a light-brown to grayish-brown silt loam grading into pale-yellow silt loam, and underlain at 8 to 10 inches by reddish-yellow to yellowish-red silty clay, which, in turn, grades into a compact silty clay or silty clay loam of a mottled, pale-yellow and light-gray or bluish-gray color. Commonly the subsoil contains small concretions or concretionary material. In places the lower subsoil is a plastic clay of mottled yellow and bluish-gray color. In the areas of poorer drainage the upper subsoil is yellow or mottled yellow and bluish gray, showing no red. Some of these areas approach the characteristics of the Calhoun in that they have gray mottling in the surface layer, and some small spots of true Calhoun silt loam are included with the type. These have a gray surface soil and, in the subsoil, a hardpan layer containing an abundance of dark-colored concretionary material. The subsoil of the Olivier silt loam in areas in the western extremity of the county is somewhat yellower and more friable than the typical subsoil. North of Centerville School in the west-central part of the county are several bodies of the type in which the subsoil is a yellow friable silt loam to an average depth of about 24 inches, overlying a friable, slightly mottled light-gray silt loam, which extends to a depth of 36 inches or more. The soil is entirely free from rock and gravel. It may be considered as the second-bottom correlative of the Collins silt loam.

This type is mapped in small areas along the creek bottoms throughout the county. It is the typical second-bottom soil of the region. It occurs on nearly level to gently sloping terraces varying in elevation from a few feet to 10 or 15 feet above the first bottoms. The lower lying areas overflow at infrequent intervals. On the north side of Bywy Creek the type occupies a series of three terraces.

The surface drainage is sufficient in most areas; a little ditching is necessary to remove the water from some low spots. The underdrainage is not so satisfactory, owing to the high water table or to the imperviousness of the compact layer or hardpan in the lower subsoil, or to both of these factors.

It is estimated that about 50 per cent of the land is in cultivation, and one-half of the cultivated land is planted to corn. The yield of corn is above the average for the county. The type is considered rather late for cotton. Oats seem to do better than on any other soil in the county, the average yield being about 10 bushels per acre. Lespedeza does especially well on this soil, and ranks close to corn in acreage. It yields about 1 ton of hay and 4 or 5 bushels of seed per acre. Bermuda grass also does well, giving good yields of hay, and furnishing valuable pasturage. Fertilizers are not used very exten-

sively on this type. The forest consists of shortleaf yellow pine, post oak, sweet gum, red oak, dogwood, holly, Spanish oak, magnolia, and other species.

The Olivier silt loam is held at $6 to $25 an acre, depending on improvements and the distance from markets. The average value is around $14 an acre.

Rice could be grown with splendid results on the more nearly level areas. Irrigation water could be had at shallow depths on much of this land. Rice is successfully grown on this type of soil in Craighead County, Ark., and in southern Louisiana.

OCHLOCKONEE FINE SANDY LOAM.

The surface soil of the Ochlockonee fine sandy loam is a light-brown fine sandy loam passing down into lighter brown or yellowish-brown fine sandy loam to fine sandy clay. Usually at depths of 16 to 24 inches yellow very fine sand or fine sandy loam is reached. The subsoil often consists of interstratified layers of different texture and color. The lower subsoil is usually coarser than the upper subsoil. The heavier subsoil material is generally more or less mottled.

The Ochlockonee fine sandy loam is developed in only a few small areas, chiefly in the bottoms of the smaller streams. Some areas occur near the stream channels in the wider bottoms. It lies slightly higher than some of the silt loam bottom lands, but it is, nevertheless, subject to overflow during heavy rains, except where drained by canals. Small ditches have been dug through most of the areas.

About 65 per cent of the Ochlockonee fine sandy loam is farmed, which is a larger proportion than in the case of any other soil in the county. The type was originally covered with a heavy growth of gum, pine, poplar, and a number of other trees.

The principal crops are corn, lespedeza, sugar cane, oats, and a little cotton. Corn yields from 10 to 50 bushels per acre, averaging about 17 bushels. Lespedeza does fully as well as on any other soil in the area. This is the favorite soil for sugar cane. The quality of the sirup is high, and the yields are above the average. Bermuda grass and sorghum succeed. Fertilizers are seldom used.

The Ochlockonee fine sandy loam is never sold alone, as it only occurs in small tracts. It should be worth about $25 or $30 an acre.

COLLINS FINE SANDY LOAM.

The Collins fine sandy loam is a light-brown to brownish-gray fine sandy loam, underlain at 6 to 14 inches by pale-yellow or yellowish-brown fine sandy loam. This extends to an average depth of 24 inches, where it rests on a bluish-gray silt loam to silty clay loam, containing in most places much dark-brown concretionary material.

Both the soil and upper subsoil vary considerably. There are areas where the soil consists of 6 to 14 inches of yellowish-brown or yellowish-red fine sandy loam, recently washed in from the uplands, and the subsoil is a bluish-gray silt loam. Many small areas of Ochlockonee fine sandy loam are included, owing to the difficulty of separating them. In places the upper subsoil is reddish. The mottled subsoil is usually somewhat compact.

Only a few scattered areas of the Collins fine sandy loam are mapped. All these occur in narrow bottoms. The surface is level, but cut by small stream channels. It is all subject to overflow, but is naturally better drained than the Collins silt loam, as it occurs only where the gradient of the streams is fairly steep. Most of it has been partly drained by ditching.

About 50 per cent of this soil is farmed. Corn, lespedeza, and sugar cane are the most important crops. Probably 40 per cent of the cultivated area is devoted to corn and almost as much to lespedeza. Corn produces an average yield of about 17 bushels per acre. A larger percentage of the type is planted to sugar cane than of any other soil in the county, largely because of the high quality of the sirup obtained. The average yield when the crop is well fertilized is probably somewhat over 150 gallons of sirup per acre. Very little commercial fertilizer is used on the other crops.

None of the Collins fine sandy loam is sold alone owing to its patchy occurrence. The average value of the areas cleared and ditched is probably about $25 an acre, and of uncleared areas about $10.

The following table gives the results of mechanical analyses of the soil, subsurface, and subsoil of this type:

Mechanical analyses of Collins fine sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
424026	Soil	0.0	3.3	8.0	36.8	8.7	35.2	8.0
424027	Subsurface	.0	2.0	4.5	24.4	12.4	48.5	8.2
424028	Subsoil	.0	.8	1.2	8.5	10.6	36.2	42.5

COLLINS SILT LOAM.

The surface soil of the Collins silt loam is a light-brown silt loam with a depth of 8 to 10 inches. The subsoil is a bluish-gray or drab silty clay loam or silty clay, mottled with yellowish brown or yellow, containing varying amounts of rusty-brown and black concretions and concretionary material. The subsoil becomes compact at depths ranging from about 18 to 24 inches, the lower subsoil often being

more silty than the upper part. This compact layer is locally known as hardpan. The lower subsoil is often very light bluish gray to almost white, and slightly mottled with yellow in more poorly drained areas, but brownish gray to bluish gray in well-drained areas.

The upper subsoil varies considerably in the smaller bottoms. It sometimes has a reddish cast and in spots is almost pure yellow. In many places the surface soil consists of yellowish-red silt loam, representing material recently washed in from the uplands. This layer ordinarily is not over 4 to 8 inches deep. The surface soil is usually deepest in the narrow, well-drained bottoms and thinnest in poorly drained areas. In the broad bottoms there are some very wet areas which are mottled with gray near the surface. These represent an approach to, or include areas of, the Waverly silt loam.

The Collins silt loam is the predominating bottom-land soil in the county. It is most typically developed on Bywy Creek, Big Black River, Yokahockany River, and tributary streams.

The surface is low lying and flat, and is subject to inundation, although since artificial drainage has been established many areas are overflowed only at long intervals. It was originally swampy most of the year. Deep canals have been cut along Bywy Creek, Yokahockany River, and Besa Chitto Creek, and some ditches have been dug in the smaller stream bottoms. No areas are tile drained. Over half of the area mapped has sufficiently good drainage to be cultivated.

About 60 per cent of the type, as estimated, is now cleared. It was originally covered with a heavy forest growth in which the most common trees were sweet gum, beech, pine, white oak, red oak, overcup oak, water oak, swamp hickory, poplar, ash, cypress, ironwood, bay, maple, holly, and magnolia. Lumbermen are rapidly removing the merchantable timber.

The Collins silt loam is the most important stream-bottom soil in the county. The total cultivated area is much larger than that of any of the other alluvial soils, and the yields are higher than on the upland soils. Corn and lespedeza are the principal crops. Cotton formerly did well, but the boll weevil does much damage in wet years, so that little has been planted on this soil recently. Corn yields from 10 to 50 bushels, with the average yield around 17 bushels per acre. Almost as much of the type is now devoted to lespedeza as to corn, and the area in lespedeza is increasing annually. It ordinarily yields 1 to 1½ tons of hay per acre, besides 5 or 6 bushels of seed.

Sugar cane does well, especially near the heads of the smaller bottoms. A light-colored clear sirup of the highest quality is made from cane produced on this soil. The average yield is 150 gallons or more

per acre. Some years almost as much sorghum as sugar cane is grown. It yields an average of about 75 gallons per acre.

Some oats are grown on the better drained areas, the yield averaging about 10 bushels per acre. Bermuda grass does well on the well-drained areas.

Most of the corn land is plowed in the spring. The crop is largely planted on high ridges, to give it ample drainage, but the present tendency is toward level cultivation. Very little commercial fertilizer is used on this type, except in growing sugar cane.

The Collins silt loam sells in the logged-off condition for $6 to $15 an acre and cleared and ditched for $15 to $35 an acre.

Rice should do well on this soil. It is grown on about the same soil in parts of Arkansas. Water for irrigation could be supplied from reservoirs built on the small tributaries or by pumping from shallow wells. Most of the streams in the county are intermittent and could not be depended on for water for irrigation without storage reservoirs.

More ditches and canals are the greatest need of this type. Tile drainage systems would avoid the necessity of cutting up the fields with ditches and would facilitate the use of large machinery, to which the level surface admirably adapts the land. Bermuda grass is a valuable hay and pasture crop.

COLLINS SILTY CLAY LOAM.

The Collins silty clay loam is a brown silty clay loam, 5 to 8 inches deep, commonly faintly mottled with rusty brown and, in the subsurface, with gray. Below this layer is a compact silty clay or silty clay loam, mottled with bluish gray and yellow or yellowish brown and containing varying quantities of black and rusty-brown concretions and concretionary material. The lower subsoil consists of a light bluish gray (or nearly white) plastic clay, somewhat mottled with yellow. The soil is remarkably uniform in texture, but is somewhat coarser near the stream banks and heavier in the lowest areas at some distance back from the streams.

The Collins silty clay loam occurs in a single large area in the bottoms of Big Black River and its tributary, Bywy Creek, or Ditch. The surface is level, except for a general slope down stream of about 3 feet per mile. Most of it is in a swampy condition. A large canal has been cut through the lower part of it as far as the county line of Montgomery County, but that is not effective in removing the water from the principal part of the area in Choctaw County. The water now backs up in the canal owing to the slight fall, but the canal is now being extended farther down the stream,

and when completed will probably drain off most of the water in ordinary seasons. Then with the cutting of lateral ditches most of the type probably can be cultivated. Scarcely 1 per cent is cultivated at the present time. The rest is covered with a heavy mixed forest growth, consisting of sweet gum, beech, white oak, overcup oak, red oak, water oak, pine, poplar, cypress, swamp hickory, ironwood, bay, ash, maple, holly, magnolia, and other trees. Most of the large oak and gum has been cut for staves and veneer lumber, and most of the ash and cypress has also been removed. The remaining trees of commercial value are rapidly being cut.

The cultivated areas are all newly cleared, and are mostly planted to corn, which is grown between the stumps. No fertilizers are used.

The Collins silty clay loam sells for $5 to $8 an acre without the timber, and for $25 to $30 where cleared. Much has been sold during the last four years as a result of the levying of a drainage tax.

This type should make fine lespedeza land. Rice should also do well. Water could be pumped from the drainage canal which is never dry or from artificial reservoirs on the smaller tributaries. Better drainage is the most pressing need of this type.

VICKSBURG VERY FINE SANDY LOAM.

The Vicksburg very fine sandy loam is a light-brown very fine sandy loam to loam, 6 or 8 inches deep, grading into a yellowish-brown loam to silt loam, which at an average depth of about 26 inches is underlain by mottled grayish-brown, yellow and reddish-brown very fine sand. The soil and subsoil vary greatly within short distances. Interstratified layers of brownish-yellow or brownish-red very fine sand and mottled brownish-gray silt loam are common in the subsoil.

This type, and the related Vicksburg silt loam, are developed in the stream bottoms, the type of coarser texture lying nearer the heads of the streams where the currents are more rapid.

Only a few small areas are mapped. About 45 per cent of the land is cleared and cultivated, and corn occupies nearly half of the area cropped. The average yield is about 17 bushels per acre. Lespedeza has an acreage next to that of corn. Sugar cane is relatively important. It does well when fertilized. Little fertilizer is used on the other crops.

This type of soil sells for $10 to $35 an acre, depending on the improvements, drainage, and distance from markets. It is never sold alone, as it occurs only in small bodies.

VICKSBURG SILT LOAM.

The Vicksburg silt loam consists of a brown mellow silt loam, 8 to 12 inches deep, overlying reddish silt loam to silty clay with some gray mottling. The lower subsoil is a mottled, yellowish-brown, reddish-brown, and gray silt loam or brownish-red friable clay. Sandy layers are quite common in the subsoil. The subsoil is often distinctly stratified into layers of material of different color but of fairly uniform texture. Particles of lignite appear in both soil and subsoil.

The Vicksburg, which is closely associated with the Collins silt loam, resembles in many respects the latter type. The only essential difference is that the Collins has a compact bluish-gray or mottled lower subsoil. The soils pass one into the other through almost imperceptible gradations, and rather arbitrary boundaries had to be drawn between them in mapping.

The Vicksburg silt loam is an alluvial soil mapped only in the bottoms, mostly in the western and southern parts of the county. It is most commonly found along streams that head in the Susquehanna, Ruston, or Kirvin soils, while the Collins is more likely to be found along streams that head in the Pheba silt loam. The Vicksburg is apparently developed where the soil material is derived largely from Coastal Plain material, and the Collins silt loam where most of the material comes from the Brown loam formation. The largest areas of the type are found along Tibby Creek.

The surface is flat, with a slope in the direction of stream flow of 3 to 10 feet per mile. Most of the type is still in a swampy condition. Very little can be farmed until it is ditched. The underdrainage is better than in case of the Collins silt loam, as the compact layer or hardpan appearing in the subsoil of the latter type does not appear in the Vicksburg. For that reason artificial drainage is more effective in the Vicksburg areas.

All the type was originally covered with a heavy forest. Cypress is much more common than on the Collins silt loam. Hemlock, spruce pine, hazelnut, chestnut, and papaw seem to be fairly common on the Vicksburg and not on the Collins silt loam; otherwise the forest is about the same.

This is considered the best corn land in the area, and over half the cultivated area is devoted to this crop. The ordinary yield is 18 or 20 bushels per acre, although yields often run as high as 50 bushels per acre. Some of the better drained areas are used for the production of oats. The yield is about 10 bushels per acre. Sugar cane gives better yields here than on any other soil in the area, but the quality of the sirup is not as good as that produced on soils having light-colored subsoils. Very little cotton has been grown on this soil

since the boll weevil came into the region. Velvet beans should do well with corn. Little commercial fertilizer is used, except on the sugar cane.

The Vicksburg silt loam cleared and ditched is held at $20 to $35 an acre, and unimproved land at $5 to $20, without timber rights.

The greatest need of the type is better drainage. It could all be well drained by installing a system of canals and ditches. There are especially large areas along Tibby Creek that would be very productive farming land if reclaimed.

SUMMARY.

Choctaw County is situated about 50 miles northeast of the center of Mississippi. It comprises an area of 414 square miles, or 264,960 acres. It lies within the Coastal Plain. The topography consists of rolling uplands and flat stream bottoms. The uplands are well drained. The Illinois Central Railroad and the Gulf, Mobile & Northern Railroad cross the county and the Southern Railway parallels the northern boundary just outside of the county.

The winters are short. The summers are long and rather hot. The mean annual precipitation is 52.42 inches; the mean annual temperature 63.2° F. The average length of the growing season is 220 days.

Farming and lumbering are the principal industries. The principal crops are corn, cotton, lespedeza, sugar cane for making sirup, cowpeas, sweet potatoes, oats, peanuts, Irish potatoes, watermelons, peaches, and a large number of vegetable and garden crops for home use. There has been a marked change in the system of farming since the boll weevil invaded the county. Less cotton and more live stock are produced.

One-horse machinery is used almost exclusively. The mules and horses used are small. Most of the cattle are the milk type—fairly good Jersey grades. The hogs are largely Poland-China and Duroc-Jersey grades.

Commercial fertilizers are used very generally on the upland soils. Most of the farm labor is done by the farmer and members of his family. The farms are comparatively small. According to the census of 1920 the average size of the farms is 104.2 acres,[5] of which 34.5 acres are cleared. Land values range from $6 to $20 for uncleared land. Cleared upland sells for $6 to $15 or more an acre, and cleared alluvial land for $10 to $30 or more an acre.

The soils of the county are classified as follows: (1) Those derived from the unconsolidated sands and clays of the Coastal Plain, the

[5] The census counts each tenancy as a farm; the average size of the individual holdings is somewhat larger than this.

Ruston, Susquehanna, Orangeburg, and Kirvin series; (2) those derived from the Brown loam formation, represented by the Pheba series; (3) the second-bottom alluvial soils represented by the Olivier series; and (4) the first-bottom alluvial soils, including the Ochlockonee, Collins, and Vicksburg series.

The Susquehanna silt loam has a hilly surface and an impervious clay subsoil and is subject to severe erosion. It is quite extensive, but only a small proportion is farmed. It is especially suited for use as Bermuda grass pastures and for forestry.

The Susquehanna clay represents eroded areas of the silt loam, some of which were formerly cultivated. Its chief use is as pasture land.

The Ruston fine sand has a rolling surface and excellent drainage. It is an early soil, somewhat droughty for general crops, but especially suited to the growing of truck crops.

The Ruston fine sandy loam has a rolling to hilly surface and good to excessive drainage. It is rather droughty and subject to erosion. It produces fair yields of cotton and corn, and is especially adapted to fruit and vegetable growing.

The Ruston very fine sandy loam has a gently rolling to rolling surface and very good drainage. It holds moisture well and is a productive soil. It is the leading type for the production of cotton. Corn, peaches, and most vegetables do well.

The Orangeburg fine sandy loam is rolling to hilly and has very good drainage. It is subject to severe erosion. It is a productive soil, but only a small part of it is cultivated because of its topography.

The Kirvin fine sandy loam has a rolling surface and good drainage, and is easily eroded. It produces fair yields of corn and cotton.

The Kirvin silt loam is mostly rolling, well drained, and inclined to wash. The common upland crops are grown and give average yields.

The Pheba silt loam is one of the most extensive types in the county. It has an undulating to gently rolling surface and good surface drainage. The underdrainage is poor on account of the compact, impervious subsoil, and the type is subject to erosion. A large proportion of it is cultivated, its topography being a favorable factor. All the upland crops are grown on this soil and give good average yields.

The Olivier silt loam is the only second-bottom soil mapped in this county. It occurs on gently sloping terraces, mostly above overflow. The compact clay subsoil causes poor internal drainage. The type produces excellent yields of corn, oats, lespedeza, and Bermuda grass.

The Ochlockonee fine sandy loam is a first-bottom soil of limited extent. A large proportion has been drained and is in cultivation. It produces good yields of corn, lespedeza, and sugar cane.

The Collins fine sandy loam is an inextensive first-bottom soil subject to overflow. When drained it is adapted to corn, lespedeza, and especially to sugar cane.

The Collins silt loam is the most important first-bottom soil in the county. It is flat, subject to overflow, and in need of drainage. Much of it is still in forest. The type produces good yields of corn, lespedeza, oats, and sugar cane, and could be used for rice.

The Collins silty clay loam is found in a single area. Most of it is in a swampy condition, and nearly all of it forested.

The Vicksburg very fine sandy loam is a first-bottom soil of limited extent. A large part is in cultivation and is used chiefly for producing corn and lespedeza.

The Vicksburg silt loam is a swampy type, but comparatively easy to reclaim. When drained it produces good yields of corn and lespedeza. Much of it is still in forest.

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U. S. DEPT. OF AGRICULTURE
BUREAU OF SOILS
IN COOPERATION WITH THE
MISSISSIPPI GEOLOGICAL SURVEY

SOIL MAP

MISSISSIPPI
CHOCTAW COUNTY SHEET

LEGEND

- Collins fine sandy loam (Cm)
- Pheba silt loam (P)
- Collins silt loam (C)
- Ruston fine sand (Rs)
- Collins silty clay loam (Cc)
- Ruston fine sandy loam (Rf)
- Kirvin fine sandy loam (Kf)
- Ruston very fine sandy loam (Rv)
- Kirvin silt loam (Ki)
- Susquehanna silt loam (Ss)
- Ochlockonee fine sandy loam (Oc)
- Susquehanna clay (Sc)
- Olivier silt loam (Ot)
- Vicksburg very fine sandy loam (Vv)
- Orangeburg fine sandy loam (Os)
- Vicksburg silt loam (Vs)

CONVENTIONAL SIGNS

CULTURE
(Printed in black)

City or Village, Roads, Buildings, Wharves, Jetties, Breakwater, Levee, Lighthouse, Fort

Secondary roads and Trails

Railroads, Steam and Electric

Bridges, Ferry

R.R. Crossings, Tunnel

Ford, Dam

School or Church, Cemeteries

Mine or Quarry, Mine dumps, Made land

Bluff, Escarpment, Rock outcrop and Triangulation station

Stony and Gravelly areas

Soil boundaries

Boundary lines

Boundary lines

Boundary lines

U.S. township and section lines

RELIEF
(Printed in brown or black)

Contours, Depression contours

Prominent hills, Mountain Peaks

Sand, Wash, and Sand dunes

Shore and Low-water line, Sandbar

DRAINAGE
(Printed in blue)

Streams

Lakes, Ponds, Intermittent lakes

Intermittent streams

Springs, Canals and Ditches, Flumes

Swamp, Salt marshes

Submerged marsh, Tidal flats

The above signs are in current use on the soil maps Variations from this usage appear in some maps of earlier dates

Soils surveyed by A. C. Anderson, of the U. S. Department of Agriculture, in charge, and E. Malcolm Jones and Thomas Jabine of the Mississippi Geological Survey.

1 ½ 0 1 2 3 4 Miles
Scale 1 inch = 1 mile

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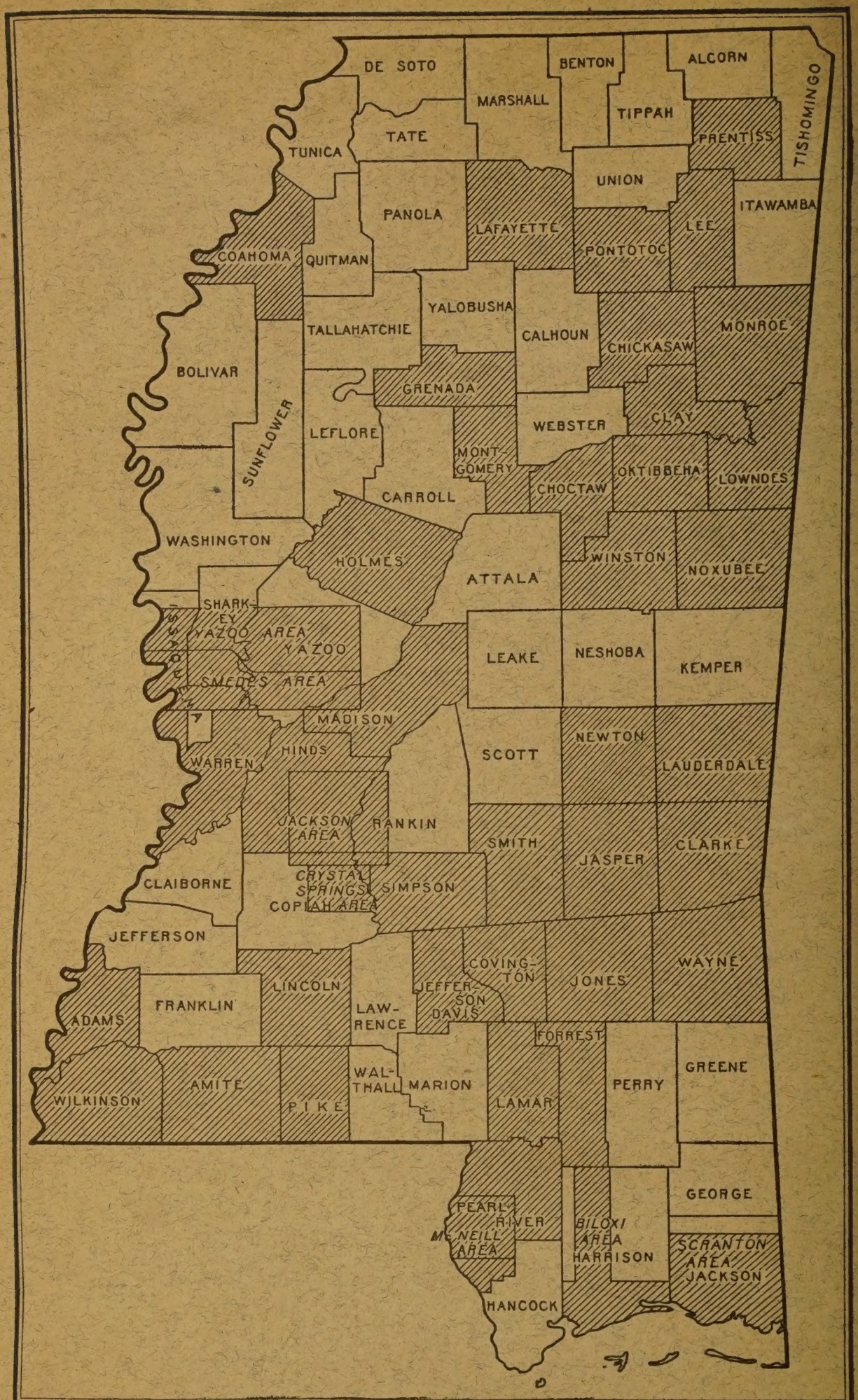
Field Operations
Bureau of Soils
1920



Areas surveyed in Mississippi, shown by shading.